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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
MEONSKE, TONIA L	

ART UNIT	PAPER NUMBER
2181	

DATE MAILED: 11/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/459,703	PADWEKAR, KIRAN A.	
	Examiner	Art Unit	
	Tonia L. Meonske	2181	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 October 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2 and 4-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1, 2, 4, 5, 10-16, and 20-26* is/are allowed.

6)☒ Claim(s) *6-9 and 17-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *13 December 1999* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *10/26/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the following limitations must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

a. In claim 1 "wherein the processor is to compare results from one of the executions of the plurality of instructions to results from another of the executions of the plurality of instructions",

b. in claim 6 "wherein the at least one execution is determined by analyzing a program for highly repeated executions",

c. in claim 10 "wherein the host system is to compare first result of replaying the at least one execution to a second result of replaying the at least one execution",

d. in claim 17 "wherein the at least one execution is determined by analyzing a program for highly repeated executions",

e. in claim 20 "comparing results of replaying the execution one time to results of replaying the execution other times",

f. in claim 23 "comparing results of replaying the execution one time to results of replaying the execution multiple times".

2. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing

should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

3. Claims 6-9 and 17-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. In claim 6, lines 11 and 12, and in claim 17, lines 7 and 8, the following limitation is unclear: "wherein the at least one execution is determined by analyzing a program for highly repeated executions". A program is a set of instructions that get executed on a computer. The way the claim is worded doesn't make any sense, how can one analyze a program for executions? One can either analyze a program for highly repeated instructions or analyze the execution of a program for highly repeated executions. Appropriate correction is required.

5. Claims 7-9, 18, and 19 are rejected for incorporating the defects of the claims from which they depend.

Claim Rejections - 35 USC § 103

6. Claims 6-9 and 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Deao et al., US Patent 6,065,106 in view of Kawasaki, US Patent 5,301,198.

7. Referring to claim 6, Deao et al. have taught a system for replaying executions comprising:

a. a storage element (Figure 45, element 4512, The storage element is where the state is saved when the processor is halted.);

b. a memory hierarchy coupled to the storage element (Figure 45, Figure 1, element 23);

c. a system bus coupled to the memory hierarchy (Figure 1, element 41); and

d. a processor coupled to the system bus (Figure 1, element 10), the processor to execute instructions from the memory hierarchy (Figure 45, element 4510) and wherein after a replay break is received, the processor reaches to reach a steady state (Figure 45, element 4512), to transfer original code of the memory hierarchy to the storage element (Figure 45, element 4512), to load a replay handler into the memory hierarchy (Figure 45, element 4516) and to execute the replay handler to repeatedly replay at least one execution to test for proper operation of the processor, wherein at least one execution includes a plurality of instructions (Figure 45, elements 4516, 4518, 4520, and 4522, column 51, line 50-column 52, line 30), and wherein the at least one execution is determined by analyzing a program for highly repeated executions (Figure 45, elements 4512, 4514, and 4516, The program is analyzed and the processor is halted in response to an emulation event, element 4516 then finishes

determining the at least one execution and transfers the instructions, or highly repeated executions, of the at least one execution into an instruction register.).

8. Deao et al. have not specifically taught wherein the processor is capable of repeatedly replaying the at least one execution without the receipt of another replay break. However, Kawasaki has taught a processor that is capable of repeatedly replaying the at least one execution without the receipt of another replay break (Kawasaki, abstract, Figures 5, 6 and 8, column 6, line 61-column 7, line 20, column 7, line 49-column 9, line 24) for the desirable purpose of achieving a highly efficient programmable controller which ensures the ease of debugging. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the processor of Deao et al. be capable of repeatedly replaying the at least one execution without the receipt of another replay break, as taught by Kawasaki, for the desirable purpose of achieving a highly efficient programmable controller with optimal debugging.

9. Referring to claim 7, Deao et al. have taught the system of claim 6, as described above, and wherein the original code is loaded into the memory hierarchy after the at least one execution has been repeatedly replayed (Figure 45, element 4524, column 51, line 50-column 52, line 30).

10. Referring to claim 8, Deao et al. have taught the system of claim 6, as described above, and further comprising a system memory and wherein the storage element is a location in the system memory (Figure 45, element 4512, The storage element is where the state is saved when the processor is halted. The storage element is included in the system, therefore the storage element is part of the system memory.).

11. Referring to claim 9, Deao et al. have taught the system of claim 6, as described above, but they have not specifically taught wherein the storage element in a hard drive. However, having the storage element be a hard drive allows for a greater capacity for state information to be stored and the information would be non-volatile, so the information would not be lost in the absence of power. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the system, as taught by Deao et al., have the storage element be a hard drive so that a greater amount of state information could be stored and the information would not be lost when power is absent.

12. Referring to claim 17, Deao et al. have taught a method for replaying executions in response to a replay signal, the replaying including:

a. interrupting normal processor execution (Figure 45, element 4512);

b. loading a replay kernel (Figure 45, element 4516);

c. repeatedly replaying at least one execution to test for proper operation of a processor, wherein the at least one execution includes a plurality of processor instructions (Figure 45, elements 4516, 4518, 4520, and 4522, column 51, line 50-column 52, line 30), wherein the at least one execution is determined by analyzing a program for highly repeated executions (Figure 45, elements 4512, 4514, and 4516, The program is analyzed and the processor is halted in response to an emulation event, element 4516 then finishes determining the at least one execution and transfers the instructions, or highly repeated executions, of the at least one execution into an instruction register.); and

d. resuming normal executions (Figure 45, element 4526, column 51, line 50-column 52, line 30).

13. Deao et al. have not specifically taught wherein the repeated execution of the replay kernel does not require receipt of another replay signal. However, Kawasaki has taught wherein the repeated execution of the replay kernel does not require receipt of another replay signal (Kawasaki, abstract, Figures 5, 6 and 8, column 6, line 61-column 7, line 20, column 7, line 49-column 9, line 24) for the desirable purpose of achieving a highly efficient programmable controller which ensures the ease of debugging. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the processor of Deao et al. wherein the repeated execution of the replay kernel does not require receipt of another replay signal, as taught by Kawasaki, for the desirable purpose of achieving a highly efficient programmable controller with optimal debugging.

14. Referring to claim 18, Deao et al. have taught the method of claim 17, as described above, and further comprising generating the at least one execution (Figure 45, elements 4516, 4518, 4520, and 4522, column 51, line 50-column 52, line 30).

15. Referring to claim 19, Deao et al. have taught the method of claim 18, and further comprising accessing state information (Figure 45, elements 4512 and 4524).

Response to Arguments

16. Applicant's arguments with respect to claim 6-9 and 17-19 have been considered but are moot in view of the newly applied ground(s) of rejection above.

Allowable Subject Matter

17. Claims 1-5, 10-16, and 20-26 are allowable over the prior art of record. Examiner respectfully notes that all of the claimed features MUST be illustrated in the drawings, as described above.

Conclusion

18. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure as follows. Applicant is reminded that in amending in response to a rejection of claims, the patentable novelty must be clearly shown in view of the state of the art disclosed by the references cited and the objections made. Applicant must also show how the amendments avoid such references and objections. See 37 CFR § 1.111(c).

a. Merchant et al., US Patent 6,212,626, have taught determining whether an instructions execute correctly based on both a scoreboard and an external replay signal.

b. Boggs et al., US Patent 6,877,086, have taught a checker which communicates to a replay queue instructions that have not executed successfully.

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tonia L. Meonske whose telephone number is (571) 272-4170. The examiner can normally be reached on Monday-Friday, with every other Friday off.

20. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dov Popovici can be reached on (571) 272-4083. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

21. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

tlm

WILLIAM M. TREAT
PRIMARY EXAMINER